



IMTA is now a regular session topic at international aquaculture conferences. It is interesting to see how IMTA has gradually gained legitimacy as a full-fledged session at international conferences. From the table below, one can realize that the seaweed aquaculture sessions were originally the vehicle for promoting the burgeoning IMTA concept. A key point in the maturing of the topic was the Aquaculture Europe 2003 Conference in Trondheim, Norway, whose theme was “Beyond Monoculture. New Multitrophic Systems – Potential and Constraints”. It was the first large international meeting (389 participants from 41 countries) whose main focus was on what would become known as IMTA the following year. In 2006, at the joint European Aquaculture Society (EAS) and World Aquaculture Society (WAS) Conference in Florence, Italy, IMTA was recognized as a serious research priority and an option to consider for the future development of aquaculture practices. In 2010, IMTA was the topic of a full day session (17 presenters from 12 countries) during the first day of the WAS conference in San Diego, USA. IMTA has remained the topic of full day sessions at both the EAS and WAS conferences in 2012 (17 presenters from 14 countries in Prague, Czech Republic) and again in 2013 (19 presenters from 6 countries in Nashville, USA).

Year	Conference	Name of the session	Number of speakers
1998	WAS, Las Vegas, USA	Macroalgal cultivation	14
2000	EAS, Nice, France	Ecological and genetic implications of aquaculture activities	6
2003	EAS, Trondheim, Norway	Beyond monoculture	Whole conference
2004	WAS, Honolulu, USA	Seaweed culture and integrated aquaculture development	14
2006	EAS/WAS, Florence, Italy	Sustainable practices	13
2007	WAS, San Antonio, USA	IMTA	8
2009	WAS, Veracruz, Mexico	IMTA, bioremediation and waste treatments	15
2010	WAS, San Diego, USA	IMTA	17
2012	EAS/WAS, Prague, Czech Republic	IMTA	17
2013	WAS, Nashville, USA	IMTA	19

IMTA continues to generate a lot of interest as an aquaculture practice, as attested to by the diversified audiences filling the room, always asking interesting questions and being willing to continue the discussion after the sessions are over. The session in Nashville was no exception, extended by an IMTA lunch and an IMTA round-table session, masterfully organized by Shawn Robinson.

The next two pages give you a glimpse of the activities of the IMTA group in Nashville: the academic stuff and not so academic stuff, but, of course, all in the name of networking! Many conference attendees ended up at the Grand Ole Opry, one of the famous institutions of the Music City, on Saturday night. What an “integrated” evening! Country music lovers, or not (lots of Celtic influence when the fiddlers are on stage (the barn roof?!), enjoyed a total show, where experienced and aspiring musicians alternate in a contagious good old spirit. All that under the control of the MC radio show announcer of WSM 650AM, directly from the 50s-60s, and keeping a straight face despite what he was announcing (“Men need to worry about three numbers: their blood pressure, their cholesterol level and their testosterone level. If you have a problem with your T number, go to the T Clinic in downtown Nashville”)!)







Most of the presentation of Thierry Chopin, entitled “Integrated Multi-Trophic Aquaculture: the origins of IMTA and its conceptual flexibility and adaptability”, has already been published in the latest issue of the *Global Aquaculture Advocate*.

Read the article:

<http://www.unbsj.ca/sase/biology/chopinlab/articles/files/Chopin%202013%20GAA%20IMTA.pdf>

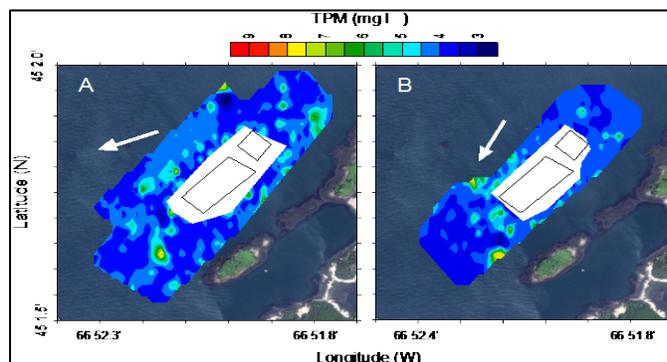
Sarah Curry, Associate Producer of *Fish Navy Films*, who was presenting her movie “Fish meat: choose your farm wisely” at the conference, attended the IMTA session and wrote a blog on it.

Read the blog: <http://fishnavy.com/blog/worldaquaculturesocietyconference2013/>

Lindsay Brager is an MSc candidate in the Department of Oceanography at Dalhousie University. She grew up splitting her time between Toronto, Ontario, and Orange County, California, where her interest in the ocean was first sparked. In 2009, she graduated with a BSc in Biology from Queen’s University, in Kingston, Ontario. Over the course of her undergraduate degree, she developed a passion for studying anthropogenic impacts on aquatic ecosystems. Upon graduation, Lindsay knew her next challenge was to pursue a MSc degree. She received the opportunity to be a part of CIMTAN for her MSc thesis, working with Dr. Peter Cranford (Fisheries and Oceans Canada Bedford Institute of Oceanography) and Dr. Jon Grant (Dalhousie University). Her project involved delimiting the magnitude, spatial extent, timing and dispersion of suspended particulate matter released at fish aquaculture sites. This knowledge is essential to understanding how IMTA systems should be designed and operated. CIMTAN provided Lindsay with the opportunity to conduct field work on both the east (Bay of Fundy, New Brunswick) and



Lindsay Brager preparing a seawater sample for instrument calibration (photo credit: Peter Cranford).



Colour-scaled contour plots of total particulate matter (TPM) (mg L⁻¹) at an aquaculture site based on data collected between 0.5 and 2 m depth on 5 July, 2011 (A) and 6 July, 2011 (B). Arrows indicate the predominant current flow direction during each survey period.

west (Kyuquot Sound, British Columbia) coasts of Canada. Field work has included *in situ* remote sensing techniques for the collection of high-resolution spatial and temporal data in both the near- and far-field environments. Research has shown that spatial distribution patterns of suspended total particulate matter (TPM) are patchy in nature, and do not exhibit the ideally envisioned “plume” of suspended particulate matter emanating from the fish farms. Furthermore, temporal patterns are indicative of predominantly tidal driven TPM dynamics, and do not show any distinct farm-derived peaks in concentration. These

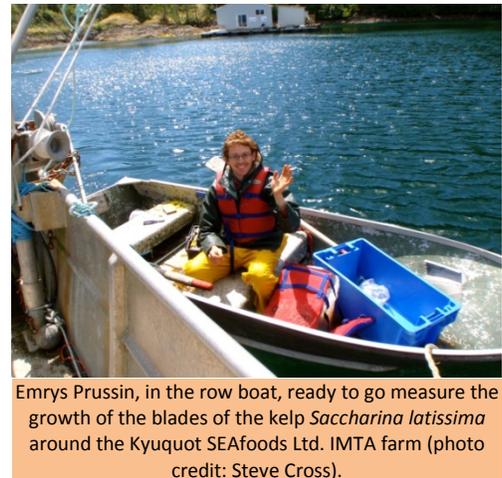
findings have provided evidence of the highly variable nature of TPM surrounding fish aquaculture



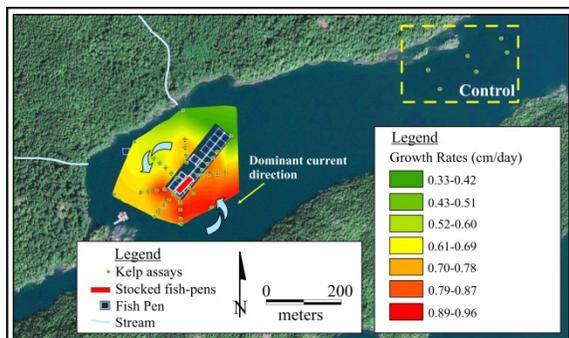
sites and the complexities associated with the educated placement of bivalves at an IMTA site to ensure maximal interception of any particulates exiting the fish cages. Upon completion of her MSc degree, Lindsay plans to use the invaluable skills and knowledge developed through CIMTAN. She hopes to continue working in aquaculture, and be a part of the development of increasingly sustainable aquaculture practices in North America.

First CIMTAN member quote of the month: "Being a part of CIMTAN allowed me to develop working relationships with Fisheries and Oceans Canada, as well as industry partners, providing a greater perspective on the applications and importance of my research." (*Lindsay Brager, CIMTAN MSc candidate*).

Emrys Prussin joined CIMTAN in 2009 as a MSc student with Dr. Stephen Cross at the University of Victoria, in British Columbia. His work showed the patterns of nutrient release around the Kyuquot SEAfoods Ltd. IMTA farm on the Northwest coast of Vancouver Island. This farm combined a number of species, including sable fish (*Anoplopoma fimbria*) and sugar kelp (*Saccharina latissima*). Emrys grew kelps for a full season on an array of buoys around the fish pens and measured how quickly the thin blades grew. This work started early in the first year mid-winter when the kelp "seeds" had to be collected, grown and transplanted out to the farm. His fieldwork involved treks up the island through beautiful forests and small First Nations communities. Long days on the docks and in the row boat were punctuated by hail storms, rain, fog and delicious fresh seafood. In the late summer of



Emrys Prussin, in the row boat, ready to go measure the growth of the blades of the kelp *Saccharina latissima* around the Kyuquot SEAfoods Ltd. IMTA farm (photo credit: Steve Cross).



Map of the growth rates of the kelp *Saccharina latissima* around the Kyuquot SEAfoods Ltd. IMTA farm.

2010, when kelp growth began to slow, Emrys said goodbye to the rowboat and farm and compiled the growth data he had collected. They show that kelps really did benefit from the nutrients being released by the fish. The growth rates were mapped around the farm site and showed that kelps growing close to the pens, and in the dominant current direction, grew significantly more quickly than the kelps growing further away. Emrys was able to map these differences in growth around the farm as a way to visualize the nutrient plume and to help the farm with kelp siting. By cultivating the kelps in zones of highest growth, and highest nutrient concentrations,

the farm can take advantage of the nutrient plumes and remove wastes as efficiently as possible. In May 2012, Emrys successfully defended his thesis, entitled "Use of an *in situ* kelp bioassay to map the nutrient plume around an IMTA farm". He is now working on environmental assessment projects.

Second CIMTAN member quote of the month: "I had some great times at the farm, on the quiet water surrounded by nature. I really miss it up there and will cherish the time I spent measuring blades of golden kelps." (*Emrys Prussin, CIMTAN MSc*).



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CIMTAN *Snippets*



The latest addition to, and youngest member of, CIMTAN! Madison Ivy Coes, the daughter of Meryl and John Coes, was born on Sunday, December 30th, 2012, at the Saint John Regional Hospital.

Congratulations!